Course Syllabus

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BIOS 340/540: Integrative Animal Physiology

SYLLABUS Spring 2021

*NOTE: **BIOS 340/540 has an approved exemption from dual delivery:** this course is designated FULLY ONLINE/synchronous only; asynchronous attendance is not an option for this course*

We aim to have you learn mechanisms by which animals solve day to day problems of staying alive; learn skills, strategies, and ways of thinking that are particularly relevant to the study of physiology; and perhaps most important of all, enjoy learning the marvelous phenomena of the animal world.

Meetings:	Tuesdays & Thursdays, 9:40-11:00 AM, FULLY ONLINE
Instructors:	Beth Beason-Abmayr, PhD: **bbeason@rice.edu (mailto:bbeason@rice.edu)** David Caprette, PhD: **caprette@rice.edu (mailto:caprette@rice.edu)**
Office Hours:	Dr. Beason: email me for an appointment Dr. Caprette: please check my schedule at the url **http://www.ruf.rice.edu/~bioslabs/bios415/Office_hours.html (http://www.ruf.rice.edu/~bioslabs/bios415/Office_hours.html)** or email me for an appoir
Required Resources:	TEXT: *Animal Physiology*, Fourth Edition, Hill et al. (2016) Research articles and materials from Canvas; computer for in-class participation/dis with access to web, including Canvas

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Course Learning Goals and Intended Learning Outcomes

Goal 1: Acquire a fundamental knowledge of “how animals work”

Learning outcomes

- Demonstrate a working knowledge of mechanisms by which animals function
- Explain how selected physiological mechanisms came to be
- Describe the integration of physiological systems
- Consider interactions between animals and their environments
- Predict possible trade-offs and physiological constraints

Goal 2: Recognize how prior and new knowledge relate to current/future work

Learning outcomes

- Integrate your knowledge of physiology with new information along with your previous knowledge of biology
- Apply your knowledge and experience to answer questions, solve problems, and investigate case studies in multiple contexts

Goal 3: Appreciate the importance of animal physiology

Learning outcomes

- Demonstrate a desire to learn more about the mechanisms responsible for animal function
- Relate physiological mechanisms in animal models to the health and disease of non-human animals and animal populations
- Relate physiological mechanisms in animal models to human health and disease

Goal 4: Understand how to collect, integrate, and communicate information

Learning outcomes

- Acquire information from the primary literature
- Distinguish reliable from unreliable information found on the web
- Critically evaluate information from various sources
- Share new information, ideas, and critiques though written and oral communication

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Goal 5: Exercise responsibility and teamwork

Learning outcomes

- Prepare for class
- Develop ways in which to work effectively within a group
- Communicate openly with your group inside and outside of class
- Engage and actively participate in group work in a constructive manner

Assessment and Policies

You will be graded on an absolute scale by percentage, as in the table. This policy means that you will not be graded relative to the performance of others in your class.

A+	≥ 98		B	83 to < 87		C-	70 to < 73
A	93 to < 98		B-	80 to < 83		D	60 to < 70
A-	90 to < 93		C+	77 to < 80		F	< 60
B+	87 to < 90		C	73 to < 77			

Assessment	Activity	% total
Exams	Focused and accurate answers to short answer and essay questions, quantitative and semi-quantitative problems; individual and group parts; online submission (*see below*)	25
Fictional Animal	Can a random, fictional animal survive (*see below*)?	25
	BIOS 340: Mini Review about your favorite vertebrate animal	

Special Topics	describing how this animal survives and thrives in its native habitat; reading guide for research article BIOS 540: Class discussion leader; original exam questions; reading guide for research article	25
Engagement & Participation	Individual or team grades based on assessment of participation in group activities and in class discussions and efforts/contributions to in-class and out-of-class assignments; Formative Assessments include Group Contract, In-class Participation, Minute Questions (MQs), Homework, Concept Maps, Reading Quizzes, and Reflections (*see below*)	25

This semester we will be conducting a study looking at teaching and learning. The purpose of this study is to determine the factors that influence teaching effectiveness and learning. Dr. Beason will collect some information about your experiences in this class to help us make this class as productive and effective as possible not only for you but also for future students. Your participation in this study will last for the duration of the current semester and will entail activities no different from the regular activities you would otherwise engage in as part of the course. If you would like more information, please do not hesitate to ask. *If you would like to opt out of the study, please talk to Dr. Beason as soon as possible.*

Rice Honor Code. Work on assignments other than those specifically identified as group activities must not be shared with other students. All submitted work must be your own. Detailed guidelines are specified with each assignment in Canvas. When you turn in an assignment, you must be able to make the statement, "On my honor, I have neither given nor received any unauthorized aid on this assignment." All students will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this institution. Consult the Honor System Handbook at **http://honor.rice.edu/honor-system-handbook/ (http://honor.rice.edu/honor-system-handbook/)** for details about this code and how it is administered. This handbook outlines the University's expectations for the integrity of your academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Information regarding plagiarism is available on the Rice Honor Council website, and all students should be familiar with these guidelines.

Attendance policies. You are expected to attend all class meetings and participate in class discussions and other activities. Absences may be excused due to illness or unexpected/unavoidable emergencies; students are expected to contact the instructor by email as soon as possible in the event of illness or an emergency. *You must be in class to earn credit for Minute Questions and any in-class group activities/discussions.* If you report and document an excused absence (see below) then we will adjust your scores accordingly.

Excused absences. Any absence due to circumstances beyond your control will be excused. You will be responsible for all content covered during the missed class but will not be held responsible for graded in-class activities. We may require documentation such as a note from a physician or a death notice. We may ask for a note from a faculty or staff member who can attest to the necessity of your attending an event in the case of a travel conflict.

Electronics policy. Use of electronics (e.g., computers, tablets, cell phones) during class is *strictly prohibited* unless instructed to do so for a class activity. If you prefer to take notes electronically, please obtain instructor permission to do so. During those times when you use a laptop or hand-held device during class to look up information, you should not be surfing the internet, reading e-mail, sending text messages, working on other classes, checking grades, or such.

Late policy. The penalty for late assignments is a deduction of 10% of the total possible score per 24-hour period past the deadline, including weekends and holidays.

Exam policies. You must contact the instructors ***prior*** to any exam if you have an excused absence and will be unable to attend class on the scheduled exam date; we can arrange to have you take the exam at an **earlier** time. We cannot reschedule an exam because you have an exam or a major assignment due in another course on the same day. We cannot give exams after the regularly scheduled time. In the event of illness we will need documentation as explained above. If you miss an exam, and due to circumstances beyond your control you cannot notify us in advance, then you **must** provide documentation in order to make up the credit. At our discretion we will replace the missed exam with an additional assignment (possibly a different exam) or simply not include the missed exam in determining your final course grade.

Communication. We will communicate with you primarily through Canvas. You will be notified of any changes to the schedule and/or class meetings as well as updates/modifications to assignments.

- Monitor assignment due dates each week to ensure that you are aware of upcoming assignments
- Check e-mail and Canvas Announcements frequently for new or updated class information

Participation. Students are expected to be actively engaged during class.

- When joining class remotely, please keep your video camera on and microphone muted. Use the [chat, raise hand, unmute, etc.] when you have questions or would like to participate. Students needing an accommodation for using their camera or microphone should contact me at the beginning of the semester to discuss and work out needed adjustments.
- Use the "Group Homepage" in Canvas for collaborating in Google docs, uploading files, discussing issues, etc.
- Use screen-share software, Google docs, Zoom breakouts, portable white boards, etc. if you need to view other students' work.
- Online discussions and activities are an integral portion of the course. You may be asked to engage in an offline dialogue with colleagues throughout each session as indicated in session directions.
- Active engagement is an essential component of the learning process. Participation in this course includes active reading and discussion within online forums and class activities during the week. Students are expected to log into the course at the scheduled time, monitor course discussions, and engage as appropriate for the course several times a session.

Additional Information

GROUP WORK. Group work is integral to this course and is a crucial feature of both professional and personal life. Self-reflection, shared discovery, and collective learning are key elements for transforming and elevating the learning experiences of each member of your team. BIOC 340 provides numerous opportunities to explore ways to engage in a group and to discover strategies for effective teamwork. Which strategy will be most effective for an individual to promote optimal group function will vary with the membership and possibly the activity — and key challenges are gathering multiple ways of interacting, figuring out how to "read" the group, and adapting your style to promote group success. *Groups will be assigned on the first day of class and will work together throughout the semester.*

RESEARCH ARTICLES. Throughout the semester you will be assigned research articles from the primary literature. These research articles will investigate physiological concepts or mechanisms related to the unit we are covering in class. In preparation for the in-depth class discussion about the research, you are expected to read the article before coming to class. To help you read the article and prepare for the discussion, we will give you Reading Guides. You will submit a reading quiz in Canvas before class, and there will be a MQ at the beginning of class. We will try different discussion

strategies depending on the topic of the paper.

ASSESSMENT and ACTIVITIES

Exams (25% of final grade). There are several types of exams in this course: 1) Mini Exams (25 points each): timed exams completed in Canvas; 2) Group Exams (15-20 points each): submitted in Canvas; 3) Final Exam (50 points): timed exam completed in Canvas. Mini Exams 1-2 will test over all of the concepts and principles covered in the section *Food, Energy, and Temperature*; Mini Exams 3-4 and RA 2 Exam will test over *Oxygen, Carbon Dioxide, and Internal Transport*; Mini Exams 5-6 will test over *Water, Salts, and Excretion.* Group Exams will cover a unit. The Final Exam will be integrated and evaluate comprehensive knowledge. You are responsible for content covered in class as well as in the textbook and assigned research articles, addressed in group work sessions, and contained in assignments outside of class.

> **Exam feedback.** We do not use "exam graders." Both instructors will team up to grade each entire exam. We do not split up the grading – rather, we both read each response and agree on a score. Therefore there will be no "regrades" of exams. Although we do not post keys, we will give you feedback on your answers in Canvas.

Fictional Animal Project (25% of final grade): Each team will be assigned a random, fictional animal and your job as a team is to consider if this animal can survive. In particular, you are interested to determine if its body systems are compatible with each other. To help in your analyses, you will have homework question sets and dedicated class time where you can get assistance thinking about your animal. By then, you will have learned about the systems in class. Throughout the semester, you will submit question sets where you 1) explain interactions and function between the different systems; 2) consider trade-offs in function and efficiency; and 3) consider constraints on physiological processes. In the final assignment, you will 1) name your animal and describe/draw/model what it looks like (*your description may be accompanied by a hand or computerized drawing, but it must be an original image; your animal should not closely resemble an extant animal*) and 2) document whether this animal can exist in the environment you choose as-is or if not, what could be changed so that it can. During the last week of class, you will share the design of your animal.

NEW! Special Topics (25% of final grade)

- **Mini Review (BIOS 340).** You will write a paper (~2,500 words) about your favorite vertebrate animal. In your paper, you will incorporate the central themes of this course as you describe how

this animal survives and thrives in its native habitat. This assignment will be scaffolded throughout the semester: you will prepare the paper in stages and we will give you feedback at each stage.

- **ASSIGNMENTS FOR GRADUATE STUDENTS (BIOS 540).**

  As you probably know, an institution's post-baccalaureate degree programs, including master's and doctoral degree programs, should be more advanced in academic content than the corresponding undergraduate degree programs. In BIOS 540 we meet this criterion by incorporating the following assignments into the course grade in addition to the homework, worksheets, reflections, group work, and exams that are required of undergraduates in BIOS 340. Both assignment types require higher order critical thinking, Bloom's Taxonomy level 6, which is quite appropriate for graduate level work.

  - **Reading Guide for Research Article.** For each unit you are asked to identify a journal article, published within the last three years, that is relevant to one of the topics covered in that unit. The articles must be from the primary literature that report findings from original research, are authored by the original investigators, and are peer-reviewed. You are asked to read the article thoroughly and prepare a reading guide similar to the guides provided to the class for the articles we discuss.
  - **Original Exam Questions.** The ability to write a good exam question requires a deeper understanding of the subject matter and its significance than the ability to correctly answer a question that was written by someone else. In addition to demonstrating a superior understanding of the material, writing exam questions is very good experience should you ever find yourself in a teaching role. You are asked to write two original exam questions with answer key for each unit (*Food, Energy, and Temperature; Oxygen, Carbon Dioxide, and Internal Transport; Water, Salts, and Excretion*), each from a different class meeting. Exam questions should be of the short answer or short essay type, can include quantitative problems, and must require higher order thinking. A guide for writing exam questions will be available in Canvas.

Engagement & Participation (25% of final grade). Many of the assignments and activities you will do throughout this course are formative assessments which are designed to help you learn what you know as well as what you don't know. You will earn some participation points for completion of these assessments, which contribute to 10% of your overall course grade. More importantly, you will receive detailed feedback from us to help you improve your learning.

- **Group Contract:** Working effectively in a group requires commitment to the group and respect for each member of the team. Recognizing both positive and negative group behaviors in ourselves and in each other promotes strong group dynamics. To promote positive group interactions, you

will work with your team to prepare a draft, and as a class we will create a consensus Group Contract that each student will sign and adhere to for the course of the semester.

- **In-class Participation**: The effectiveness of the group dynamics during class will be assessed using the following Self-Graded Participation Rubric.This assessment is worth 2 points each class period; at the end of class, your "EXIT TICKET" will be your self-evaluation of your participation. *NOTE: you must attend class to earn these points.*

1. My communication with group members was open and supportive; our group worked together effectively	Not At All (0 pt)	Somewhat (0.5 pt)	Y (1.
2. I was engaged and actively participated in group work in a constructive manner; I contributed to discussions based on assigned reading	Did Not Contribute (0 pt)	One to Two Contributions (0.5 pt)	Mu Contri (1.

- **Minute Questions (MQ).** These short quizzes will be given at the beginning of the class period *over the assigned material for that class*. You are expected to complete the assigned readings in Hill *et al.*, to read assigned research articles, and to view any relevant videos and/or online resources BEFORE CLASS. These quizzes are closed-book/notes and will be available two hours before the start of class. You will earn up to 3 points for each MQ that you answer and will receive feedback from us about your response: 1 point for on-time submission; 1 point for attending class; 1 point for answering correctly.
- **Homework:** These questions, worksheets, or problems are designed so you can apply what you learn in readings and discussions to explore concepts in more depth, especially those that are more challenging to understand. While you submit homework individually, we often allow you to discuss the assignment as a team. You will have opportunities to work on these assignments during class.
- **Concept Maps:** Each team will create a concept map for each major unit we cover from the textbook. You will build your construct map during one or more class periods. This activity will help you review what you know and identify what you don't know and provides a visual representation of the integrative nature of physiology.
- **Reading Quizzes:** Throughout the course, there will be quizzes based on the assigned readings

in the textbook and research articles. Each short quiz is designed to

- emphasize key concepts
- uncover possible misconceptions
- gauge what you do / don't know
- prepare you for class discussions and activities

We encourage you to think about applications of the key concepts and ask yourself additional questions to test yourself.

The quiz will open a few days before class and close the morning of class. You will have ~30 minutes to answer several short answer questions. *It is essential that you read and study the chapter before taking this quiz as you may not be able to "look-up" the correct answer in the reading.* ***You will earn points for each question you answer****; although you will still earn partial credit for an incorrect answer, we encourage you to make a genuine attempt to answer the question correctly (if you just pick an answer to complete the quiz on time, then you will defeat the purpose for the quiz, which is to help you learn the concepts and prepare for class). Your answers will be graded at a later time.*

- **Reflections:** Your first reflection will be due the first week of classes. Throughout the semester, a reflection will be due in Canvas on the indicated dates/times that states clearly what you found to be most interesting or challenging in the material since the last Reflection and *why*. These reflections can address what you didn't know previously and find interesting, what impact something you learned has on your own perceptions, what long-term implications a specific discovery/piece of information has on you/on society….whatever was important to you about the material covered. Some reflections associated with specific assignments (e.g., the Fictional Animal Project) may ask you specific questions about the assignment and what/how you learned. *Reflections will be submitted in Quizzes in Canvas.*

Extra credit. You will have several opportunities throughout this course to earn extra credit. Extra credit may be awarded for exemplary class participation and/or exceptional answers on assignments or exams. BONUS questions may be given on exams. Towards the end of the semester, there will be *optional* extra credit assignments in Canvas.

NOTE: a detailed class schedule and information/instructions for each assignment will be available in Canvas.

TECHNOLOGY RESOURCES

- Students must have a working computer with a video camera, speaker and a microphone, and a working internet connection that allows them to be on video. Students should test their equipment before joining class. Undergraduate students should contact the Dean of Undergraduates if they have concerns about meeting this requirement.
- If your computer/phone has no webcam/microphone, which may be needed to complete some assignments, please let me know as soon as possible and contact the Dean of Undergraduates if you need to request support via the Access and Opportunity Portal (**HTTPS://AOP.RICE.EDU/APPLICATION (https://aop.rice.edu/application)**).

PRIVACY AND CONFIDENTIALITY

- In line with **FERPA REQUIREMENTS (https://registrar.rice.edu/facstaff/ferpa_FAQs/)** , recorded classroom discussions involving students will be available only to students officially registered and enrolled in the class. If you have concerns about appearing on these recordings, please contact me ahead of time.
- I may desire or plan to use recordings from this class for another educational purpose. If this situation arises, and in line with **FERPA REQUIREMENTS (https://registrar.rice.edu/facstaff/ferpa_FAQs/)** , I will ask you to consider signing individualized consent **FORMS (https://registrar.rice.edu/sites/g/files/bxs751/f/Lecture_Capture_Consent-Release.pdf)** . Students who do not provide written consent will be de-identified and/or omitted from all recordings.

STUDENTS WITH DISABILITIES

Course material will be delivered digitally (Canvas, online, or email) and may be visual (written documents, slides, videos, etc.), audio (videos, presentations, discussions), or interactive (questions, discussions, clickers, etc.). Course work will require answering questions online, typing papers, reading written materials, and discussing material with peers.

Any student with a documented or suspected disability needing academic adjustments or accommodations should 1) make sure this documentation is on file with the Disability Resource Center (Allen Center, Room 111 / **adarice@rice.edu (mailto:adarice@rice.edu)** / x5841) to determine the accommodations you need; and 2) *meet with the instructor in person or by email before the first day of class* to discuss your accommodation needs – all discussions will remain confidential.

TITLE IX RESPONSIBLE EMPLOYEE NOTIFICATION

Rice University cares about your wellbeing and safety. Rice encourages any student who has experienced an incident of harassment, pregnancy discrimination or gender discrimination or relationship, sexual, or other forms interpersonal violence to seek support through The SAFE Office. Students should be aware when seeking support on campus that most employees, including myself, as the instructor/TA, are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. For more information, please visit **safe.rice.edu (http://safe.rice.edu/)** or **email titleixsupport@rice.edu (mailto:titleixsupport@rice.edu)**. For more information about Title IX, please contact Title IX Compliance Officer **Richard Baker. (mailto:richard.a.baker@rice.edu)**

DEAN OF UNDERGRADUATES GUIDELINES FOR RELIGIOUS ACCOMMODATIONS

Both Rice's policy of non-discrimination on the basis of religion and our core values of diversity and inclusion require instructors to make reasonable accommodations to help students avoid negative academic consequences when their religious obligations conflict with academic requirements. Every reasonable effort should be made to allow members of the university community to observe their religious holidays without jeopardizing the fulfillment of their academic obligations. Absence from classes or examinations for religious reasons does not relieve students from responsibility for any part of the course work required during the period of absence. You are obligated to provide me with reasonable notice of the dates of religious holidays on which you will be absent.

Information contained in this syllabus, other than the absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructors.

Course Summary:

Date	Details	
	Hill Ch. 6-7 Reading Quiz	due by 9am

Thu Jan 21, 2021	(https://canvas.rice.edu/courses/36629/assignments/177664)	
	MQ 1 (https://canvas.rice.edu/courses/36629/assignments/177735)	due by 11am
Tue Jan 26, 2021	Hill Ch. 8 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177694)	due by 9am
	MQ 2 (https://canvas.rice.edu/courses/36629/assignments/177737)	due by 11am
	Constructive and Destructive Group Behaviors (https://canvas.rice.edu/courses/36629/assignments/177677)	due by 11:59pm
	Reflection 1 (https://canvas.rice.edu/courses/36629/assignments/177702)	due by 11:59pm
Wed Jan 27, 2021	Team Animal (https://canvas.rice.edu/courses/36629/assignments/182131)	due by 11:59pm
Thu Jan 28, 2021	Research Article 1 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177690)	due by 9am
	MQ 3 (https://canvas.rice.edu/courses/36629/assignments/177738)	due by 11am
	Practice Exam Question (https://canvas.rice.edu/courses/36629/assignments/177745)	due by 11:59pm
Fri Jan 29, 2021	Group Contract (https://canvas.rice.edu/courses/36629/assignments/177718)	due by 11:59pm
Tue Feb 2, 2021	Biology Review: PART I Fundamentals of Physiology (https://canvas.rice.edu/courses/36629/assignments/177699)	due by 11:59pm
	Hill Ch. 9 Reading Quiz	

	(https://canvas.rice.edu/courses/36629/assignments/177689)	due by 9am
Thu Feb 4, 2021	Research Article 2 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177686)	due by 9am
	MQ 4 (https://canvas.rice.edu/courses/36629/assignments/177739)	due by 11am
Tue Feb 9, 2021	Hill Ch. 10 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177662)	due by 9am
	Mini Exam 1: Ch. 6-8 (https://canvas.rice.edu/courses/36629/assignments/179124)	due by 11am
	MQ 5 (https://canvas.rice.edu/courses/36629/assignments/177740)	due by 11am
Thu Feb 11, 2021	Hill Ch. 11 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177669)	due by 9am
	Research Article 3 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177698)	due by 9am
	MQ 6 (https://canvas.rice.edu/courses/36629/assignments/177741)	due by 11am
Tue Feb 16, 2021	Reflection 2 (https://canvas.rice.edu/courses/36629/assignments/177684)	due by 11:59pm
Thu Feb 18, 2021	HW 1: Countercurrent Heat Exchange Mechanisms (https://canvas.rice.edu/courses/36629/assignments/177719)	due by 11:59pm
	Mini Review: Animal Choice (https://canvas.rice.edu/courses/36629/assignments/178870)	due by 11:59pm
	Concept Map 1: Part II Food,	

Fri Feb 19, 2021	Energy, and Temperature (https://canvas.rice.edu/courses/36629/assignments/177709)	due by 11:59pm
Tue Feb 23, 2021	Hill Ch. 22-23 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177693)	due by 9am
	Mini Exam 2: Ch. 9-11 (https://canvas.rice.edu/courses/36629/assignments/179125)	due by 11am
	MQ 7 (https://canvas.rice.edu/courses/36629/assignments/177742)	due by 11am
	Group Exam 1 - Pt. II: Food, Energy, and Temperature (https://canvas.rice.edu/courses/36629/assignments/179119)	due by 11:59pm
Thu Feb 25, 2021	Hill Ch. 24 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177667)	due by 9am
	MQ 8 (https://canvas.rice.edu/courses/36629/assignments/177743)	due by 11am
Sun Feb 28, 2021	Original Exam Questions: 1-Food, Energy, and Temperature (https://canvas.rice.edu/courses/36629/assignments/178869)	due by 11:59pm
	Research Article Reading Guide: 1-Food, Energy, and Temperature (https://canvas.rice.edu/courses/36629/assignments/177707)	due by 11:59pm
Tue Mar 2, 2021	Fictional Animal Question Set 1: Thermoregulation and Preliminary Animal (https://canvas.rice.edu/courses/36629/assignments/177712)	due by 11:59pm
Thu Mar 4, 2021	Hill Ch. 25 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177680)	due by 9am
	MQ 9	due by 11am

	(https://canvas.rice.edu/courses/36629/assignments/177744)	
Fri Mar 5, 2021	HW 2: Oxygen Affinity, O2 Equilibrium Curves, and Oxygen Carrying Capacity (https://canvas.rice.edu/courses/36629/assignments/177720)	due by 11:59pm
Tue Mar 9, 2021	Hill Ch. 26 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177668)	due by 9am
	Mini Exam 3: Ch. 22-24 (https://canvas.rice.edu/courses/36629/assignments/179126)	due by 11am
	MQ 10 (https://canvas.rice.edu/courses/36629/assignments/177736)	due by 11am
Wed Mar 10, 2021	HW 3: The Vertebrate Circulatorium (https://canvas.rice.edu/courses/36629/assignments/177678)	due by 11:59pm
Thu Mar 11, 2021	Research Article 4 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177701)	due by 9am
Fri Mar 12, 2021	Mini Review: Literature References (https://canvas.rice.edu/courses/36629/assignments/178871)	due by 11:59pm
Sun Mar 14, 2021	Research Article Reading Guide: 2-Oxygen, Carbon Dioxide, and Internal Transport (https://canvas.rice.edu/courses/36629/assignments/179492)	due by 11:59pm
	Original Exam Questions: 2-Oxygen, Carbon Dioxide, and Internal Transport (https://canvas.rice.edu/courses/36629/assignments/178874)	due by 11:59pm
Mon Mar 15, 2021	HW 4: Circulation (https://canvas.rice.edu/courses/36629/assignments/177721)	due by 11:59pm

Tue Mar 16, 2021	Reflection 3 (https://canvas.rice.edu/courses/36629/assignments/177703)	due by 11:59pm
Thu Mar 18, 2021	Fictional Animal Question Set 2: Respiratory and Circulatory Systems (https://canvas.rice.edu/courses/36629/assignments/177713)	due by 11:59pm
Fri Mar 19, 2021	Concept Map 2: Part V Oxygen, Carbon Dioxide, and Internal Transport (https://canvas.rice.edu/courses/36629/assignments/177710)	due by 11:59pm
Tue Mar 23, 2021	Mini Exam 4: Ch. 25-26 (https://canvas.rice.edu/courses/36629/assignments/177685)	due by 11am
	Group Exam 2 - Pt. V: Oxygen, Carbon Dioxide, and Internal Transport (https://canvas.rice.edu/courses/36629/assignments/179120)	due by 11:59pm
Tue Mar 30, 2021	Hill Ch. 27 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177700)	due by 9am
	MQ 11 (https://canvas.rice.edu/courses/36629/assignments/177670)	due by 9:40am
Thu Apr 1, 2021	Research Article 5 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177666)	due by 9am
	MQ 12 (https://canvas.rice.edu/courses/36629/assignments/177663)	due by 9:40am
Tue Apr 6, 2021	Hill Ch. 28 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177679)	due by 9am
	Mini Exam 5: Ch. 27-28 (https://canvas.rice.edu/courses/36629/assignments/177687)	due by 11am
	MQ 13	

	(https://canvas.rice.edu/courses/36629/assignments/177675)	due by 11:59pm
Thu Apr 8, 2021	Research Article 6 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177691)	due by 9am
Sun Apr 11, 2021	Mini Review: Draft (https://canvas.rice.edu/courses/36629/assignments/178872)	due by 11:59pm
Tue Apr 13, 2021	MQ 14 (https://canvas.rice.edu/courses/36629/assignments/177695)	due by 9:25am
	Fictional Animal Question Set 3: Respiratory, Circulatory, and Excretory Systems (https://canvas.rice.edu/courses/36629/assignments/177714)	due by 11:59pm
Thu Apr 15, 2021	Hill Ch. 29 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177665)	due by 9am
	MQ 15 (https://canvas.rice.edu/courses/36629/assignments/177681)	due by 11:59pm
Sat Apr 17, 2021	HW 5: Countercurrent Multiplier (https://canvas.rice.edu/courses/36629/assignments/177722)	due by 11:59pm
Tue Apr 20, 2021	Hill Ch. 30 Reading Quiz (https://canvas.rice.edu/courses/36629/assignments/177697)	due by 9am
	Concept Map 3: Part VI Water, Salts, and Excretion (https://canvas.rice.edu/courses/36629/assignments/177711)	due by 11:59pm
Thu Apr 22, 2021	Group Exam 3 - Pt. VI: Water, Salts, and Excretion (https://canvas.rice.edu/courses/36629/assignments/179121)	due by 11:59pm
Fri Apr 23, 2021	Mini Exam 6: Ch. 29-30 (https://canvas.rice.edu/courses/36629/assignments/177682)	due by 11:59pm

Sun Apr 25, 2021	Reflection 4: Fictional Animal Project (https://canvas.rice.edu/courses/36629/assignments/177671)	due by 11:59pm
Thu Apr 29, 2021	In-class participation (https://canvas.rice.edu/courses/36629/assignments/177723)	due by 12pm
	Fictional Animal Showcase (https://canvas.rice.edu/courses/36629/assignments/177716)	due by 11:59pm
Fri Apr 30, 2021	Original Exam Questions: 3-Water, Salts, and Excretion (https://canvas.rice.edu/courses/36629/assignments/178875)	due by 11:59pm
	Reflection 5: Group Work (https://canvas.rice.edu/courses/36629/assignments/177705)	due by 11:59pm
	Research Article Reading Guide: 3-Water, Salts, and Excretion (https://canvas.rice.edu/courses/36629/assignments/179493)	due by 11:59pm
	Fictional Animal Question Set 4: Animal Description and Environment (https://canvas.rice.edu/courses/36629/assignments/177715)	due by 11:59pm
Wed May 5, 2021	Integrated Concept Map (https://canvas.rice.edu/courses/36629/assignments/177724)	due by 11:59pm
Sat May 8, 2021	Final Exam (https://canvas.rice.edu/courses/36629/assignments/177676)	due by 12pm
Wed May 12, 2021	Reflection 6: Overall Course (https://canvas.rice.edu/courses/36629/assignments/177674)	due by 11:59pm
	Letter to the next class (https://canvas.rice.edu/courses/36629/assignments/177725)	due by 11:59pm
	Mini Review: Revised (https://canvas.rice.edu/courses/36629/assignments/178864)	due by 11:59pm

MQ 1
(https://canvas.rice.edu/courses/36629/assignments/179711)

MQ 10
(https://canvas.rice.edu/courses/36629/assignments/179720)

MQ 2
(https://canvas.rice.edu/courses/36629/assignments/179712)

MQ 3
(https://canvas.rice.edu/courses/36629/assignments/179713)

MQ 4
(https://canvas.rice.edu/courses/36629/assignments/179714)

MQ 5
(https://canvas.rice.edu/courses/36629/assignments/179715)

MQ 6
(https://canvas.rice.edu/courses/36629/assignments/179716)

MQ 7
(https://canvas.rice.edu/courses/36629/assignments/179717)

MQ 8
(https://canvas.rice.edu/courses/36629/assignments/179718)

MQ 9
(https://canvas.rice.edu/courses/36629/assignments/179719)

Research Article 6 Reading Quiz (2021)
(https://canvas.rice.edu/courses/36629/assignments/177673)